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Washington, DC 20554

In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion	GN Docket No. 17-199

REPLY COMMENTS OF THE OPEN TECHNOLOGY INSTITUTE AT NEW AMERICA

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Executive Summary

The current proceeding is crucial in guiding how the Federal Communications Commission ("the Commission") encourages better access to broadband internet access services ("BIAS") across the country, particularly in rural and other under and unserved areas. How the Commission measures "advanced telecommunications capability" and whether it has been deployed in a "reasonable and timely" fashion will have a direct impact on the digital divide.

First, the record shows the Commission should not measure the deployment of advanced telecommunications capability based on the presence of either mobile BIAS *or* fixed BIAS because the two services are not substitutes. Mobile BIAS has limited capabilities, compared to high-capacity fixed BIAS, due to restrictions on the amount of data carriers allow their customers to use (e.g., the 22 GB "soft cap" that applies to even so-called "unlimited" plans by the two dominant mobile carriers), lower reliability of signal reception, higher costs for consumers, and lower and often inconsistent throughput. These limitations preclude users from relying on mobile BIAS as the primary source of internet access for their personal use at home or for work purposes. Consumer behavior demonstrates that mobile BIAS is a complement to fixed BIAS, and not a substitute, as research shows Americans buy both fixed and mobile BIAS when they have the means. Consumers still rely heavily on fixed BIAS networks for access, even when using mobile devices such as phones or tablets.

The record also shows support for the Commission to study how the affordability of BIAS, the data allowances imposed by BIAS providers, and latency all affect access to advanced telecommunications capability. These three factors are critical elements of advanced

telecommunications capability. Open Technology Institute (OTI) agrees with these commenters, and recommends the Commission consider these as part of its Section 706 inquiry.

Second, the Commission cannot implement a different throughput benchmark for mobile BIAS than other technologies such as fixed BIAS, as Section 706 requires the Commission to define "advanced telecommunications capability" in a technology-neutral manner. The Commission must measure mobile BIAS by whatever benchmark it sets for fixed BIAS, as the threshold the Commission imposes for advanced telecommunications capability must apply to all transmission technologies. Further, OTI urges the Commission to either increase the throughput benchmark or at the very least retain the 25 Mbps download and 3 Mbps upload threshold.

Last, the Commission should move rapidly to finalize its vacant channel proceeding and ensure at least 18 megahertz of unlicensed spectrum in TV White Spaces on a nationwide basis. The Commission should also rapidly implement shared spectrum frameworks, most notably the Citizens Broadband Radio Service ("CBRS") and the underutilized 3700 MHz- 4200 MHz band to improve the deployment of advanced telecommunications capability in rural and other underserved areas. The Commission should reject calls from the carriers to change the licensing framework under the CBRS rules that would make licenses unaffordable to all but the largest mobile carriers. The Commission should also take up a rulemaking to create a new, licensed, point-to-multipoint fixed wireless service in the 3700 MHz- 4200 MHz band to facilitate high-capacity and affordable broadband in rural and other low-density areas.

I. Introduction

Open Technology Institute at New America files these reply comments addressing three critical issues addressed in the initial comment round: first, as OTI argued previously, the Commission should not focus its Section 706 inquiry on whether *either* mobile *or* fixed BIAS is being deployed to all Americans, in large part because mobile and fixed BIAS are not substitutes for one another. Second, Section 706 requires a technology-neutral definition of "advanced telecommunications capability," which precludes the Commission from adopting its own separate mobile-only throughput benchmark of 10 Mbps download and 1 Mbps upload, as well as precludes it from adopting other proposals in the record. Third, the Commission should move rapidly to finalize its vacant channel proceeding and ensure at least 18 megahertz of unlicensed spectrum in TV White Spaces on a nationwide basis.

II. The Commission Should Not Base its Section 706 Inquiry on "Whether Some Form of Advanced Telecommunications Capability, Be It Fixed or Mobile, Is Being Deployed to All Americans in a Reasonable and Timely Fashion"

It would be improper for the Commission to alter its Section 706 inquiry to focus on whether some form of advanced telecommunications capability (either fixed or mobile) is being deployed to all Americans in a reasonable and timely fashion. First, despite the arguments of some commenters, mobile broadband internet access service (BIAS) is not a substitute for fixed BIAS, which provides a superior connection in many ways. Second, consumers still rely heavily on fixed BIAS despite growing mobile BIAS adoption rates. Third, the Commission should consider at least three other factors that are also crucial elements of *effective* access to advanced telecommunications capability: affordability, data allowances, and latency.

A. Mobile BIAS Is Not a Substitute For Fixed BIAS

There is strong consensus in the record that mobile BIAS is a complement to fixed BIAS rather than a separate and distinct way to achieve advanced telecommunications capability.[1] In general, Americans who can afford both buy both as the services meet different consumer needs and have different capabilities. Comments from a diverse range of companies, associations, and consumer advocacy groups voiced strong opposition to the suggestion that the Commission assess the deployment of advanced telecommunications capability based solely on the availability of mobile BIAS.[2] Diverse commenters agree that mobile BIAS has limited capabilities, compared to high-capacity fixed BIAS, due to restrictions on the amount of data carriers allow their customers to use (e.g., the 22 GB "soft cap" that applies to even so-called "unlimited" plans by the two dominant mobile carriers),[3] lower reliability of signal reception, higher costs for consumers, and lower and often inconsistent throughput.[4] The limiting characteristics of mobile BIAS render it a complementary connection that consumers can use for limited purposes "on the go" and away from their high-capacity and less expensive home and business fixed BIAS. Today's mobile BIAS offerings cannot replace fixed BIAS as a primary home or business internet connection.[5]

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[1] *See* Microsoft Comments at 7; Wireless Internet Service Providers Association Comments at 3 ("WISPA Comments"); NTCA—The Rural Broadband Association Comments at 24; Deere & Company Comments at 2; Public Knowledge et al. Comments at 20; INCOMPAS Comments at 10; Institute For Local Self-Reliance and Next Century Cities Comments at 1 and 3; Mimosa Networks Comments at 3. References to comments relate to this proceeding unless noted otherwise.

[2] *See supra* note 1.

[3] AT&T and Verizon offer what they call "unlimited" data plans that slow the user's connection after 22 GB, while Sprint sets its "soft cap" at 23 GB and T-Mobile allows 50 GB. Chaim Gartenberg, *T-Mobile increases unlimited data cap from 32GB to 50GB*, The Verge (Sep. 19, 2017), https://www.theverge.com/2017/9/19/16334690/t-mobile-unlimited-data-cap-increase-32gb-50gb-deprioritization.

[4] INCOMPAS Comments at 10-11; Mimosa Networks Comments at 3; Microsoft Comments at 8.

[5] OTI Comments at 5-19.

In its *2016 Broadband Progress Report*, the Commission found mobile BIAS and fixed BIAS are complements rather than substitutes. The agency stated that "advanced telecommunications capability should be deemed deployed only in areas where consumers have access to both services."[6] The Commission would clearly not have concluded last year that consumers need access to both a high-capacity fixed service *and* a mobile service to have adequate access to advanced telecommunications capability if the two were substitutable.

A few commenters incorrectly opine that because consumers are increasingly using and (in a few cases) even relying primarily on mobile BIAS, it has become a viable substitute for fixed BIAS.[7] USTelecom, for example, argues that from "real-life observations" they know that consumers are using mobile devices for "many voice, data, graphics, and video applications." To support this assertion and that some consumers are "cutting the [fixed BIAS] cord," it adds that a Pew Research Center survey showed 12 percent of adults had smartphones but no fixed home broadband.[8] The underlying assumption of this argument is wrong. While some consumers rely primarily on smartphones for internet access, this does not demonstrate that mobile BIAS meets the full range of consumers' needs, or that the services are viewed as substitutes. USTelecom ignores the Pew survey data suggesting that most mobile-only Americans cannot afford the cost of subscriptions to both mobile and fixed broadband services.[9] A substantial percentage of the

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[6] *2016 Broadband Progress Report*, 31 FCC Rcd 2667 at ¶ 24 (rel. Jan. 29, 2016). There was support in the record for measuring advanced telecommunications capability on the presence of *both* mobile *and* fixed BIAS as well. *See* ITTA Comments at 6; Deere & Company Comments at 2; INCOMPAS Comments at 7 ("Access to both fixed and mobile broadband are necessary to meet the needs of consumers; and therefore, the Commission should not reverse course on its previous finding that benchmarks for each should be met.").

[7] AT&T Comments at 5; Free State Foundation Comments at 3-4; USTelecom Comments at 6.

[8] USTelecom Comments at 6.

[9] *See* Public Knowledge et al. Comments at 21-22; WISPA Comments at 6 ("Moreover, it appears that many people who limit themselves to mobile-only broadband do so not as a matter of preference, *e.g.*, as a result of reaching a qualitative conclusion that mobile service is a true substitute for a fixed Internet connection, but for largely economic reasons."); *2016 Broadband Progress Report* at ¶ 39 ("Moreover, the data suggest

mobile-only population is low-income: 20 percent of adults who make $30,000 or less annually rely on mobile BIAS, compared to 4 percent of those who make $100,000 or more annually.[10] Those who have the financial means to purchase both fixed BIAS and mobile BIAS generally purchase both.[11]

USTelecom also argues that voice telephony shows how consumers move toward mobile technologies and how consumer preferences change over time.[12] However, as OTI argued in initial comments, while a growing share of households have "cut the cord" on landlines to rely on wireless phone services, that phenomenon is unlikely to happen with BIAS in the near future. Mobile BIAS does not offer capabilities comparable to fixed BIAS at a similar or lower cost. Whereas an individual can complete voice calls from home, work, or any location with a mobile phone, the high-capacity internet connection and truly unlimited data at a reasonable cost that is characteristic of fixed BIAS is not something consumers can easily replicate by relying on mobile BIAS alone. Both mobile and fixed BIAS throughput speeds and capacity are improving steadily, making it more difficult for mobile BIAS to catch up and provide comparable bandwidth at an affordable price.[13] For example, the Commission reported in its recent *Internet Access Services* report that "[t]he percentage of fixed connections with a downstream speed of at least 25 Mbps has

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that those Americans that do rely on mobile broadband exclusively often lack the means to purchase both services. In a recent survey of smartphone adoption in America, Pew Research found that only 13 percent of Americans rely on a smartphone only for broadband access at home, compared to eight percent in 2013. Critically, this group of 'smartphone only' users is disproportionately comprised of young, low income, and minority Americans.").

[10] Monica Anderson, Digital divide persists even as lower-income Americans make gains in tech adoption, Pew Research Center (March 22, 2017), http://www.pewresearch.org/fact-tank/2017/03/22/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/.

[11] *See 2016 Broadband Progress Report* at ¶ 24; Public Knowledge et al. Comments at 20, 22.

[12] USTelecom Comments at 7 ("The portion of U.S. households that rely on wireless-only telephone service grew from 3 percent in 2003 to more than 50 percent as of 2016.").

[13] MoffettNathanson Research, *U.S. Cable and U.S. Telecom: Could Unlimited Wireless Plans Pose A Threat to Wired Broadband?* (Apr. 12, 2017) at 7.

grown from 24% (or 23 million connections) in June 2013 to 57% (or 59 million connections) in June 2016.[14] Mobile BIAS, by comparison, is still lacking even at 10 Mbps download and 1 Mbps upload. The *2016 Broadband Progress Report* found that 53 percent of all Americans lack access to mobile BIAS at 10 Mbps download and 1 Mbps upload, and that 87 percent of Americans living in rural areas lack such access.[15]

Some commenters argue further that emerging wireless technologies, such as what is generically called "5G," could allow mobile BIAS to become a substitute for fixed BIAS. Even if this turns out to be true, 5G technologies are years away from standardization, let alone network deployments on a scale that could make them a viable replacement to fixed BIAS.[16] AT&T effectively concedes that mobile BIAS is not currently an adequate substitute for fixed BIAS by arguing that 5G networks will make mobile BIAS "even more fully substitutable" as carriers deploy 5G networks "in the coming years."[17] The phrase "in the coming years" means that the services have not fully deployed. And the phrase "even more fully substitutable" makes little sense; mobile BIAS is either a full substitute for fixed BIAS now or it is not. In addition, some commenters stress that even future mobile wireless technologies cannot yet be viewed as potential substitutes to fixed BIAS, due to steadily increasing demands for more robust broadband capabilities (including not just speed, but low latency and huge quantities of bandwidth at an affordable cost).[18]

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[14] Wireline Competition Bureau, *Internet Access Services: Status as of June 2016* (April 2017), at 5.
[15] *2016 Broadband Progress Report* at ¶ 83.
[16] *See, e.g.*, Statement of FCC Chairman Tom Wheeler, *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, GN Docket No. 14- 177 (July 14, 2016), https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A2.pdf.
[17] AT&T Comments at 5.
[18] INCOMPAS Comments at 10; Larry Thompson & Warren VandeStadt, *Evaluating 5G Wireless Technology as a Complement or Substitute for Wireline Broadband, Vantage Point*, at 5 (Feb. 2017), https://www.ntca.org/images/stories/Documents/Press_Center/2017_Releases/02.13.17%20fcc%20ex%20parte-ntca%20letter%20submitting%202017%20technical%20paper%20wc%2010- 90.pdf.

Rural residents would be particularly disadvantaged by efforts to lower the throughput benchmark and artificially manufacture a finding that more Americans have access to "advanced telecommunications capability." While only 10 percent of the entire U.S population lack access to fixed advanced telecommunications capability, that percentage is more than three times larger—39 percent—for those who live in rural areas. To compare, only four percent of Americans who live in urban areas do not have access to "fixed advanced telecommunications capability."[19] Rural Americans should not be asked to 'make due' with second-class home and business broadband connections (assuming they can get a strong mobile signal indoors at all). Individuals living in rural communities continue to be plagued by slow internet speeds due to a lack of infrastructure. These slow speeds result in lower computing adoption rates that could leave these consumers with a significant handicap in the modern economy.[20] The stunted adoption rates for computing devices and slow internet speeds also leave rural consumers unconnected to critical services online for healthcare, employment, education, government services, financial services, news services, and communications services.

High-speed broadband access in rural areas is increasingly important, not only for individual households but for businesses. For example, as Deere & Company explains, the real-time sharing of data for precision agriculture requires reliable mobile and wireline broadband services. The need for robust rural broadband coverage will only increase as "smart" farming and ranching technologies become more widespread. The ability of farmers using this equipment to improve efficiency and yield will "depend on their ability to leverage high speed broadband connections capable of enabling real-time M2M and machine to farm ("M2F") interaction."[21]

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[19] *See 2016 Broadband Progress Report*, Table 1 at ¶ 79.
[20] Microsoft Comments at 3-4.
[21] Deere & Company Comments at 2-3.

Finding that mobile BIAS is an adequate substitute for fixed BIAS would also have a negative and disproportionate impact on the disability community. Americans with disabilities -- specifically those who are deaf and hard of hearing -- rely on high-speed broadband for basic communications needs. Commenters representing this community note that the hard of hearing and deaf have unusually high bandwidth needs because they require the assistance of applications to complete certain tasks.[22] Without access to high-quality broadband for video calls and certain other applications, "broadband is effectively not available to these consumers."[23] Lowering the benchmark for advanced telecommunications services would harm consumers with disabilities, making it difficult for them to use the applications necessary to communicate in the same manner as Americans without disabilities.

Mobile BIAS is not a substitute for fixed BIAS, and the Commission should not treat the two separate services as equivalent.

B. Consumers Still Rely Heavily On Fixed Broadband, Despite Growth of Mobile

CTIA argues that because the adoption and usage of mobile BIAS has increased steadily in recent years, the Commission should find that mobile BIAS has been deployed in a reasonable and timely fashion.[24] However, the adoption of mobile data services does not mean that service provides adequate advanced telecommunications capability as currently defined, or that it is a

[22] Telecommunications for the Deaf and Hard of Hearing, Inc. et al. Comments at 12 ("Whereas hearing Americans often enjoy unlimited local and long distance calling, consumers that rely on Internet-based [Telecommunications Relay Services] services to communicate will not enjoy functionally equivalent communications because of data caps or data throttling.").
[23] *Id*.
[24] CTIA Comments at 8-12.

reliable and affordable substitute for households lacking access to a high-capacity, fixed BIAS connection.

As INCOMPAS explains, the widespread adoption of smartphones and wireless internet access is not a sufficient basis for a finding that fixed and mobile BIAS are close substitutes, since the majority mobile device data traffic in homes and workplaces occurs over Wi-Fi. Overall, more than 40 percent of smartphone data traffic and 90 percent of tablet traffic traverses Wi-Fi (over fixed, wireline connections) rather than mobile BIAS networks to connect to the internet.[25] Cisco's 2016 report supports this argument, noting that the share of total mobile device data traffic offloaded onto fixed networks significantly exceeded the share transported over cellular networks as of 2016. At least 60 percent of total mobile data traffic is offloaded onto fixed networks using Wi-Fi or femtocell.[26]

Open Signal similarly reported that as mobile device capabilities improve, consumers spend an increasing share of their time on mobile devices connected to fixed Wi-Fi networks.[27] The report concludes that the reliance on Wi-Fi networks for mobile devices shows that mobile BIAS is not being used to replace Wi-Fi networks, but rather to supplement fixed networks for "on the go"

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[25] INCOMPAS Comments, Appendix A, David S. Evans, *Economic Findings Concerning the State of Competition For Wired Broadband Provision To U.S. Households and Edge Providers* (Aug. 29, 2017), at 16.

[26] *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper,* Cisco (March 28, 2017), https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.html ("Of all IP traffic (fixed and mobile) in 2021, 50% will be Wi-Fi, 30% will be wired, and 20% will be mobile.").

[27] *Global State of Mobile Networks*, Open Signal (February 2017), https://opensignal.com/reports/2017/02/global-state-of-the-mobile-network ("In general though, we see a high proportion of time spent on Wifi in the majority of the 96 countries we analyzed. Specifically, 38 of those countries had time on Wifi scores of 50% or greater, meaning in a large part of the world our users are spending as much time connected to Wifi networks as they are cellular networks. Rather than acting as a mere supplement to 4G networks, Wifi remains as important a technology as any cellular system in mobile communications.").

mobility (albeit at a far higher cost per GB).[28] Thus, while wireless networks are being deployed in a timely manner *for the limited purpose of mobility*, any suggestion that mobile devices are meeting home and business broadband needs in the context of this Section 706 inquiry is based primarily on the growth of Wi-Fi offloading, which today pushes consumers onto the *fixed* broadband network since it (when compared to mobile BIAS) provides a faster, more reliable, and far more affordable way to use high-bandwidth applications or services.

C. The Commission Should Consider Additional Factors Critical to Effective Consumers Access to BIAS When Assessing Advanced Telecommunications Capability

Throughput is not the only benchmark that is relevant to the Section 706 inquiry. As stated in the statute, "advanced telecommunications capability" requires that consumers have access to "high-speed … broadband … that enables users to originate and receive *high-quality voice, data, graphics, and video* telecommunications." The Commission must take into account other factors that affect whether voice, data, graphics, and video are "high-quality." Beyond throughput, there are at least three other factors that are all crucial elements of *effective* access to advanced telecommunications capability: affordability; the data allowances imposed by BIAS providers; and latency.

OTI supports arguments made by Microsoft, INCOMPAS, and other commenters that the Commission should consider the affordability of BIAS to consumers when assessing whether it has been deployed in a reasonable and timely fashion.[29] For consumers to actually have access to BIAS that meets the throughput and other criteria established by the Commission, service of that quality

[28] Joon Ian Wong, *The countries with the world's fastest mobile internet*, Quartz (Feb. 22, 2017), https://qz.com/915726/the-countries-with-the-worlds-fastest-mobile-internet/.
[29] *See, e.g.*, INCOMPAS Comments at 6; Microsoft Comments at 5-6.

or better must be sufficiently affordable. If consumers cannot afford the offered 25 Mbps download and 3 Mbps upload BIAS offerings where they live, then that connection is effectively unavailable.[30]

Congress clearly intended that Section 706 would ensure the deployment of advanced telecommunications capability that would actually be used by and affordable to Americans. In furtherance of that goal, Congress specifically empowered the Commission to use "price cap regulation" in response to a negative finding under its Section 706 inquiry.[31] The authority to use price cap regulation is a clear indication that Congress recognized that the price of advanced telecommunications services is a crucial factor in determining whether consumers can access the "capability" actually deployed.

With respect to the availability of adequate data allowances, OTI agrees with commenters asserting that the Commission should consider how data caps and their relationship to higher prices and slowed speeds (when consumers hit the cap) dispossess some consumers from all of the benefits enjoyed through advanced telecommunications capability.[32] Data caps are a distinctive (if not exclusive) feature of the mobile BIAS marketplace and, as OTI argued in initial comments, these data caps can lead to exorbitant and unexpected charges (bill shock) that deters usage, as well as unusably slow service (throttling) for consumers who exceed these data caps.[33] While

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[30] Microsoft Comments at 6; INCOMPAS Comments at 6 ("INCOMPAS posits that broadband connections and services must be actually physically available to consumers and affordable so that they can subscribe to broadband service. It is important that the Commission measure the availability of the broadband networks and the subscribership of broadband service over those networks.").

[31] 47 U.S.C. § 1302(a).

[32] WISPA Comments at 10 ("The Commission should consider the extent to which data allowances in relation to price may deprive some users of the full benefit of advanced telecommunications capability."); NTCA Comments at 13.

[33] OTI Comments at 4-10; *2016 Broadband Progress Report* at ¶ 41("Consumers that are dependent solely on mobile broadband are significantly more likely to exceed their monthly data allowances, causing them to incur additional fees or forego use of the Internet. And, as several commenters note, mobile broadband networks lack the capacity or consistency of service to support most bandwidth intensive uses such as full-

USTelecom may characterize data allowances as merely implicating pricing and network management practices,[34] that characterization ignores the definition of advanced telecommunications capability and its emphasis on originating and receiving high-quality and high-speed broadband services. That characterization also ignores the fact, noted just above, that Congress gave the agency authority to address affordability. OTI strongly urges the Commission to consider the impact of data allowances in making any determination with respect to whether consumers are receiving "advanced telecommunications capability" sufficient "to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology" as is mandated by Section 706.[35]

The Commission should also consider latency as it assesses BIAS performance. Latency is a crucial factor in relation to whether consumers in a certain area are truly receiving "*advanced* telecommunications services" that can support high-quality voice, graphics, and video applications that increasingly incorporate interactive or near real-time performance requirements.[36] Some commenters, such as ViaSat, argue that latency should not be part of the Section 706 inquiry because "the vast majority of broadband traffic is not latency-sensitive."[37] Even if the Commission were to agree with that assertion, it is irrelevant. The statute plainly states that "advanced telecommunications capability" includes the ability to originate and receive *high-*

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screen HD video streaming, online gaming, and video conferencing applications including telehealth and education platforms.").

[34] USTelecom Comments at 12.

[35] *See* NTCA Comments at 13.

[36] *Id*. at 12-13 ("With respect to latency, it is critical that the Commission account for the fact that high latency services remain unable to support consumers' use of certain applications, reliable and quality voice service necessary for access to public safety officials chief among them"); The statutory language of Section 706 defines "advanced telecommunications service" as a service that "enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.").

[37] ViaSat Comments at 7.

quality voice, data, graphics, and video. Whether latency-sensitive traffic accounts for 5% or 95% of traffic does not change Congressional intent or the technologically-neutral statutory criteria that the Commission must analyze.

In short, the Commission should include in its Section 706 inquiry the additional metrics of affordability, data allowances, and latency.

III. Section 706 Prevents the Commission from Adopting Separate Benchmarks for Mobile than Other Broadband Technologies

Section 706 is quite clear in its mandate. The primary inquiry concerns "the availability of advanced telecommunications capability to all Americans" and "whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion."[38] However, in defining "advanced telecommunications capability," Congress clarified "[t]he term 'advanced telecommunications capability' is defined, *without regard to any transmission media or technology*, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."[39] It is clear in the statute that Congress intended "high-speed … broadband" to mean be a singular standard without regard to the technology through which consumers access the internet. The Commission must decide what constitutes high-speed broadband, but should not differentiate between technologies, much less give one technology a lower benchmark for the purpose of evaluation under the statute.[40]

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[38] 47 U.S.C. § 1302(b).

[39] *Id*.

[40] In prior comments, OTI has argued that the Commission could consider a 10 Mbps download and 1 Mbps upload throughput benchmark for mobile broadband. Although this may continue to be adequate as a benchmark for mobile BIAS as a stand-alone service, no benchmark less robust than 25 Mbps download and

The record includes some recommendations that would run afoul of this requirement. First, the NOI itself proposes a slower throughput benchmark for mobile broadband. Second, some parties suggest that the Commission should define "capability" in terms of specific types of network technologies, such as 4G LTE, rather than focusing on specific benchmarks. In actuality, the statute requires one standard regardless of technology. If the Commission is intent on allowing mobile BIAS alone to suffice for "advanced telecommunications capability," then there should be one standard, not below the current 25 Mbps download and 3 Mbps upload benchmark,[41] that applies to all transmission technologies.[42] While OTI acknowledges that a guaranteed connection of 25 Mbps download and 3 Mbps upload is unrealistic for mobile BIAS at this time,[43] this reality only reinforces the rationale behind the Commission's current policy to recognize that mobile BIAS serves a different purpose than fixed BIAS at home and work, and must therefore be viewed as a complement, not as a substitute, in the context of advanced telecommunications deployment.

The NOI's proposed throughput benchmark of 10 Mbps download and 1 Mbps upload for mobile BIAS would violate the statute. As mentioned above, "advanced telecommunications capability" has a single definition without regard to technology. However, the Commission's proposal does exactly that: it takes a separate technology, with well-known weaknesses and disadvantages, and proposes to hold it to a separate "advanced telecommunications capability" standard. Congress explicitly told the Commission, in the statute, not to take that approach. NCTA argues that the Commission's proposed 10 Mbps download and 1 Mbps upload threshold for

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3 Mbps upload should be considered in determining whether advanced telecommunications capability is being deployed.

[41] The fixed throughput benchmark should be raised, see OTI Comments at 22-25.

[42] Any other metrics adopted, including for latency, packet loss, and other QoS metrics, should apply across the board as well.

[43] The Commission itself essentially concedes this point by proposing a slower throughput benchmark for mobile BIAS. NOI at ¶ 19.

mobile BIAS "appropriately reflects the fact that most mobile connections are used by a single person and a single device."[44] Even if this difference constitutes a sufficient reason to differentiate between the technologies, it still stands that Congress told the Commission that differential treatment is impermissible.[45]

Some commenters suggest using the availability of LTE technology should be the benchmark for advanced telecommunications capability deployment.[46] Verizon argues "[t]he Commission should avoid becoming distracted by the selection of one or more specific speed thresholds and should instead focus on evaluating the steady and continued deployment of ever more advanced services, like the rapid migration from widely-deployed 3G to similarly ubiquitous 4G LTE deployments."[47] Again, this interpretation would be in contradiction with the statute. Much like treating "mobile" technology different than "fixed," this approach asks the Commission to define "advanced telecommunications capability" specifically with respect to the type of technology that wireless companies deploy—and how those companies have branded that technology.[48] Furthermore, defining the benchmark for mobile BIAS as "LTE" or "4G" would not include any specific, guaranteed speeds for consumers. In many cases LTE coverage can result in poor service for consumers, despite the praise heaped on the technology by the commenters calling for such a benchmark for mobile BIAS.[49]

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[44] NCTA Comments at 10.
[45] USTelecom's argument that mobile BIAS need not be a substitute for fixed BIAS fails on similar grounds. USTelecom Comments at 5-6. There should be one standard, not one standard for fixed BIAS and a lower standard for mobile BIAS.
[46] Verizon Comments at 13; AT&T Comments at 5; USTelecom Comments at 10.
[47] Verizon Comments at 13.
[48] WISPA Comments at 10 ("The Commission has a long history of technology neutral policymaking, which has allowed new technologies to develop without Commission action.").
[49] *Id.* ("While most LTE networks today offer high speed, LTE can be offered over relatively narrowband channels (1.4 MHz) and even a wideband LTE sector can be heavily loaded, or under-equipped with backhaul, and thus provide relatively poor service. The Commission should not provide an incentive to do so by simply accepting the technology as the benchmark.").

Relatedly, OTI opposes the Commission's proposed interpretation of the statute that would allow the Commission to merely measure year-over-year "progress" of broadband deployment.[50] First, nothing in the statute indicates Congress intended for the Commission to decide whether broadband providers made year-over-year improvements—in fact, that type of buildout and progress is expected. AT&T somehow reads into Section 706 that "[t]he statutory inquiry is to determine whether the industry is maintaining a reasonable, ongoing process of deployment, and whether any Commission regulations are impeding that process."[51] Yet that is not the inquiry put forth in Section 706. If that assessment was the one that Congress wanted the Commission to conduct, then it could have said as much in the statute. Second, focusing on census-block comparisons year-over-year is very likely to result in the Commission falling prey to the argument that "progress" under Section 706 has been made (no matter how slight or concentrated in wealthy areas) yet millions of Americans still lack access to advanced telecommunications capability.

To ensure the Commission complies with Section 706's plain language, the Commission should adopt a single set of metrics that define the contours of "high-speed" broadband and "high-quality voice, data, graphics, and video," without regard to technology. This standard should include throughput benchmarks (which OTI has previously argued should be raised to 50 Mbps download and 20 Mbps upload with a plan to implement a symmetric benchmark in the futre) in addition to the other benchmarks described above. Should the Commission decide against raising the throughput benchmark, under no circumstances should the throughput

[50] NOI at ¶ 30.
[51] AT&T Comments at 7.

benchmark be lowered.[52] There is ample support in the record to retain, at the very least, the 25 Mbps download and 3 Mbps upload benchmark.[53]

IV. The Commission Should Seek to Free Up Unlicensed and Shared Spectrum Frameworks Rather Than Exclusively Licensed Bands

CTIA argues that allocating more bands of spectrum for exclusive licensed use will ensure the reasonable and timely deployment of mobile BIAS.[54] OTI agrees with other commenters stating that the Commission can best advance the goals of Section 706, and advance both the availability and affordability of mobile connectivity, by taking a broader and more balanced approach to spectrum policy. Most immediately, the Commission should focus on implementing the Citizens Broadband Radio Service rules for the 3.5 GHz band to facilitate spectrum sharing and enable smaller providers to offer internet access to small and targeted areas where there might be no economic case for large providers to build strong connections.

The Commission should focus as well on the short-term potential of authorizing shared access to the grossly underutilized 3.7 GHz–4.2 GHz band for high-capacity fixed wireless services (point-to-multipoint). This is directly relevant to the goals of Section 706, since fixed wireless can more quickly and affordably connect homes and business locations where the feasibility or cost of trenching fiber is prohibitive. The Commission also immediately vote on its proposal to guarantee at least one vacant TV channel in every market nationwide, thereby removing regulatory

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[52] *See* OTI Comments, GN Docket 16-245 (Sept. 6, 2016), at 2-11 (arguing the throughput benchmark should be raised).
[53] City of New York Comments at 2; Communications Workers of America Comments at 17; Telecommunications for the Deaf and Hard of Hearing, Inc. et al. Comments Comments at 6.
[54] CTIA Comments at 20-21.

uncertainty and stimulating the market for both fixed wireless and mobile use of the spectrum laying idle in TV White Spaces.

As part of its recommendation, CTIA suggests adopting their proposals to change the landmark Citizens Broadband Radio Service (CBRS) licensing framework for Priority Access Licenses (PALs) to vastly enlarge licensing areas and make licenses permanent, rather than competitive.[55] As OTI argued in its reply comments in response to CTIA's petition, at least 9 out of every 10 commenters opposed the changes to the PAL rule changes proposed by CTIA and T-Mobile.[56] Rural and small wireless ISPs, enterprise wireless, content providers, internet companies and consumer advocates all opposed CTIA's proposed changes to PALs in the relevant proceeding.[57] CTIA and other industry players are seeking to "repeal and replace" the CBRS rules in the 3.5 GHz band to tailor the licensing structure to the liking of the major carriers, so they can dominate that space and edge out competitors. The Commission should move instead to implement the CBRS rules and licensing framework as adopted to provide complementary licensed and unlicensed spectrum for a diverse range of users and use cases, which will improve BIAS adoption and use in rural and other unserved areas.[58]

There is also overwhelming support in the record for the Commission to move forward on a rulemaking to add a new, licensed, point-to-multipoint fixed wireless service in the 3700 MHz–4200 MHz band to share spectrum with the largely unused airwaves occupied by Fixed Satellite

[55] *Id*. at 21.
[56] OTI and Public Knowledge Reply Comments, GN Docket No. 12-354, (Aug. 8, 2017), https://ecfsapi.fcc.gov/file/10809019113786/OTI_PK_CBRS_ReplyComments_OppoPetnsRM_Final_080817.pdf.
[57] *Id*.
[58] WISPA Comments at 12.

Services to improve broadband in rural areas of the U.S.[59] OTI filed the Petition as part of the Broadband Access Coalition (BAC) calling for the Commission to issue a rulemaking to create the shared spectrum framework for fixed wireless services in June.[60] In the petition, the coalition (made up of more than 20 wireline and wireless service providers, equipment vendors, trade associations and non-profit public advocacy groups) explained that the spectrum in the band can be made available for broadband deployment rapidly and simply, making it a simple move in improving advanced telecommunications capability.[61] The Commission can also improve advanced telecommunications capability in rural regions of the country by supporting and promoting the use of TV White Spaces to make private sector broadband deployments to rural areas more affordable.[62]

V. Conclusion

The Commission should acknowledge that mobile BIAS is not a substitute for fixed BIAS and should not measure advanced telecommunications deployment on the presence of *either* mobile BIAS *or* fixed BIAS. To the extent the Commission analyzes mobile BIAS as part of its Section 706 inquiry, it must measure deployment with the same benchmarks it uses for other broadband technologies, as the statute requires. If the Commission does not raise the throughput benchmark, as OTI has previously argued, it should at least retain the 25 Mbps download and 3

[59] Mimosa Comments at 9 ("Mimosa submits that expeditious adoption of the rules proposed in the Petition filed by BAC would significantly accelerate the deployment of advanced telecommunications capability."); WISPA Comments at iv.

[60] *Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point- to-Multipoint Fixed Wireless Broadband Service in the 3700 – 4200 MHz Band*, Broadband Access Coalition, https://na-production.s3.amazonaws.com/documents/3.7_GHz_Band_Petition_for_Rulemaking-FINAL_with_Exhibits-06.21.17.pdf.

[61] Mimosa Comments at 9.

[62] Microsoft Comments at 10-12.

Mbps upload benchmark. It should consider using unlicensed spectrum and shared spectrum frameworks such as CBRS and in underutilizing mid band spectrum to improve the deployment of BIAS.